UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,414	02/14/2005	Masatoshi Yanagidaira	041465-5257	4579

55694 7590 06/14/2006

DRINKER BIDDLE & REATH (DC)
1500 K STREET, N.W.
SUITE 1100
WASHINGTON, DC 20005-1209

EXAMINER	
KOWALEWSKI, FILIP A	

ART UNIT	PAPER NUMBER
3736	

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/524,414	YANAGIDAIRA ET AL.	
	Examiner	Art Unit	
	Filip A. Kowalewski	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/14/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, 8, 9, 18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,826,246 to Raddi et al. (hereinafter Raddi '246).

Raddi '246 discloses the following claim limitations:

Claim 1. An apparatus for detecting biological information comprising:

a contact member arranged to come into contact with a subject of biological information (Fig. 3 – 50 stretch band);

a biological information detecting member provided in the contact member and detects the biological information from the subject (Fig. 1 – 18 and 20 electrodes); and

an amplifier connected to the biological information detecting member and amplifies a biological signal corresponding to the detected biological information (Fig. 1 – 22 amplifier),

wherein a sum of a resistance between the biological information detecting member and the amplifier (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.), and an impedance between the subject in contact with the contact member and the biological information detecting member (Col.

2 – Ln. 65-67, skin to electrode impedance = 1,000 ohms), is not more than fraction (1/100) of an input impedance in the amplifier (Col. 3 – Ln. 1, amplifier input impedance = 1 megohm).

Claim 2. The apparatus for detecting biological information according to claim 1, wherein a sum of a resistance between the biological information detecting member and the amplifier (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.), and an impedance between the subject in contact with the contact member and the biological information detecting member (Col. 2 – Ln. 65-67, skin to electrode impedance = 1,000 ohms), is not more than 10 kΩ.

Claim 3. The apparatus for detecting biological information according to claim 1, wherein a resistance between the biological information detecting member and the amplifier is not more than 1/200 of an input impedance in the amplifier (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.).

Claim 4. The apparatus for detecting biological information according to claim 1, wherein a resistance between the biological information detecting member and the amplifier is not more than 5 kΩ (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.).

Claim 6. The apparatus for detecting biological information according to claim 1, wherein the biological information detecting member comprises a material containing at least one of silver, nickel, gold, palladium, carbon (Col. 6 – Ln. 55-60), and carbon nanotube.

Claim 8. The apparatus for detecting biological information according to claim 1,

wherein an impedance between the subject in contact with the contact member and the biological information detecting member (Col. 2 – Ln. 65-67, skin to electrode impedance = 1,000 ohms) is not more than (1/200) of an input impedance in the amplifier (Col. 3 – Ln. 1, amplifier input impedance = 1 megohm).

Claim 9. The apparatus for detecting biological information according to claim 1, wherein an impedance between the subject in contact with the contact member and the biological information detecting member is not more than 5 kΩ (Col. 2 – Ln. 65-67, skin to electrode impedance = 1,000 ohms).

Claim 18. A contact member included in an apparatus for detecting biological information which comprises:

a contact member that is arranged to come into contact with a subject of biological information (Fig. 3 – 50 stretch band);

a biological information detecting member that is provided in the contact member and detects the biological information from the subject (Fig. 1 – 18 and 20 electrodes); and

an amplifier (Fig. 1 – 22 amplifier) that is connected to the biological information detecting member and amplifies a biological signal corresponding to the detected biological information, and

in which a sum of a resistance between the biological information detecting member and the amplifier (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.), and an impedance between the subject in contact with the contact member and the biological information detecting member (Col.

2 – Ln. 65-67, skin to electrode impedance = 1,000 ohms), is not more than 1/100 of an input impedance in the amplifier (Col. 3 – Ln. 1, amplifier input impedance = 1 megohm), wherein a resistance of the biological information detecting member is not more than 5 kΩ (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.).

Claim 20. The contact member according to claim 18, wherein the biological information detecting member comprises a material containing at least one of silver, nickel, gold, palladium, carbon (Col. 6 – Ln. 55-60), and carbon nanotube.

Claims 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,714,874 to Morris et al. (hereinafter Morris '874).

Morris '874 discloses the following claim limitations:

Claim 28. A paint for a biological information detecting member that constitutes a detecting member for detecting biological information from a subject, wherein the paint for a biological information detecting member comprises a conductive material having a volume resistivity of not more than 25 Ωcm, epoxy resin, and a curing agent (Col. 4 – Ln. 51, 58-67 & Col. 5 – Ln. 1-6).

Claim 29. The paint for a biological information detecting member according to claim 28, wherein the conductive material comprises at least one of silver, nickel, gold (Col. 4 – Ln. 50-51), palladium, carbon, and carbon nanotube.

Claim 30. The paint for a biological information detecting member according to claim 28, wherein the conductive material comprises at least one of metal oxide, which

is transparent and has electrical conductivity, and polymer, which is transparent and has electrical conductivity (Col. 4 – Ln. 29-45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5, 7, 17, 19, 21, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raddi '246 as applied to claims 1 and 18 above, in view of Morris '874.

In regard to claim 5, Raddi '246 discloses an apparatus for detecting biological information including a contact member, biological information detecting member, and amplifier, as discussed above in regard to claim 1, but does not disclose that the biological information detecting member comprises a material having a volume resistivity of 25 Ωcm. However, Morris '874, a reference in the analogous are of electrical biological testing instruments, discloses a material for a biological information detecting member having a volume resistivity of 25 Ωcm (Morris '874, Col. 4 – Ln. 51, 58-67 & Col. 5 – Ln. 1-6). It would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the paste or paint disclosed in Morris '874 for the conductive cream disclosed in Raddi '246, since said paste or paint has a lower electrical resistivity than said conductive cream and lowering impedance between the

skin and electrode improves the accuracy of measurements (Raddi '246, Col. 3 – Ln. 30-40).

In regard to claim 7, Raddi '246 discloses an apparatus for detecting biological information including a contact member, biological information detecting member, and amplifier, as discussed above in regard to claim 1, but does not disclose that the biological information detecting member comprises a material containing at least one of metal oxide and polymer. However, Morris '874, a reference in the analogous are of electrical biological testing instruments, discloses a material for a biological information detecting member having a polymer (Col. 4 – Ln. 29-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the paste or paint disclosed in Morris '874 for the conductive cream disclosed in Raddi '246, since said paste or paint has a lower electrical resistivity than said conductive cream and lowering impedance between the skin and electrode improves the accuracy of measurements (Raddi '246, Col. 3 – Ln. 30-40).

In regard to claim 17, Raddi '246 discloses an apparatus for detecting biological information including a contact member, biological information detecting member, and amplifier, as discussed above in regard to claim 1, but does not disclose that the biological information detecting member comprising a conductive resin layer. However, Morris '874, a reference in the analogous are of electrical biological testing instruments, discloses a material for a biological information detecting member having a conductive epoxy resin layer (Col. 4 – Ln. 38-40). It would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the resin disclosed in

Morris '874 for the conductive cream disclosed in Raddi '246, since said resin has a lower electrical resistivity than said conductive cream and lowering impedance between the skin and electrode improves the accuracy of measurements (Raddi '246, Col. 3 – Ln. 30-40).

In regard to claim 19, Raddi '246 discloses an apparatus for detecting biological information including a contact member, biological information detecting member with resistance not more than 5 kΩ, and amplifier, as discussed about in regard to claim 18, but does not disclose that the biological information detecting member comprises a material having a volume resistivity of 25 Ωcm. However, Morris '874, a reference in the analogous are of electrical biological testing instruments, discloses a material for a biological information detecting member having a volume resistivity of 25 Ωcm (Morris '874, Col. 4 – Ln. 51, 58-67 & Col. 5 – Ln. 1-6). It would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the paste or paint disclosed in Morris '874 for the conductive cream disclosed in Raddi '246, since said paste or paint has a lower electrical resistivity than said conductive cream and lowering impedance between the skin and electrode improves the accuracy of measurements (Raddi '246, Col. 3 – Ln. 30-40).

In regard to claim 21, Raddi '246 discloses an apparatus for detecting biological information including a contact member, biological information detecting member with resistance not more than 5 kΩ, and amplifier, as discussed about in regard to claim 18, but does not disclose that the biological information detecting member comprises a material containing at least one of metal oxide and polymer. However, Morris '874, a

reference in the analogous are of electrical biological testing instruments, discloses a material for a biological information detecting member having a polymer (Col. 4 – Ln. 29-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the paste or paint disclosed in Morris '874 for the conductive cream disclosed in Raddi '246, since said paste or paint has a lower electrical resistivity than said conductive cream and lowering impedance between the skin and electrode improves the accuracy of measurements (Raddi '246, Col. 3 – Ln. 30-40).

In regard to claim 27, Raddi '246 discloses an apparatus for detecting biological information including a contact member, biological information detecting member with resistance not more than 5 kΩ, and amplifier, as discussed above in regard to claim 18, but does not disclose that the biological information detecting member comprising a conductive resin layer. However, Morris '874, a reference in the analogous are of electrical biological testing instruments, discloses a material for a biological information detecting member having a conductive epoxy resin layer (Col. 4 – Ln. 38-40). It would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the resin disclosed in Morris '874 for the conductive cream disclosed in Raddi '246, since said resin has a lower electrical resistivity than said conductive cream and lowering impedance between the skin and electrode improves the accuracy of measurements (Raddi '246, Col. 3 – Ln. 30-40).

Claims 10 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raddi '246 as applied to claims 1 and 18 above, in view of U.S. Patent No. 5,685,316 to Schookin et al. (hereinafter Schookin '316).

In regard to claim 10, Raddi '246 discloses an apparatus for detecting biological information including a contact member, biological information detecting member, and amplifier, as discussed above in regard to claim 1, but does not disclose an area of contact with the subject is not less than 2 cm^2. However, Schookin '316, a reference in the analogous of electrocardiography, discloses electrodes with a contact area of 12 to 30 cm^2 (Schookin, Col. 5 – Ln. 10-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the biological information detecting member disclosed in Raddi '246 to have a contact area of 12 to 30 cm^2, since such a contact area range is necessary to provide a sufficient depth of measurement to ensure accuracy (Schookin, Col. 5 – Ln. 10-30).

In regard to claim 22, Raddi '246 discloses an apparatus for detecting biological information including a contact member, biological information detecting member member with resistance not more than 5 kΩ, and amplifier, as discussed above in regard to claim 18, but does not disclose an area of contact with the subject is not less than 2 cm^2. However, Schookin '316, a reference in the analogous of electrocardiography, discloses electrodes with a contact area of 12 to 30 cm^2 (Schookin, Col. 5 – Ln. 10-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the biological information detecting member disclosed in Raddi '246 to have a contact area of 12 to 30 cm^2, since such a

contact area range is necessary to provide a sufficient depth of measurement to ensure accuracy (Schookin, Col. 5 – Ln. 10-30).

Claims 1, 11-16, 18, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,572,207 to Yoshimi et al. (hereinafter Yoshimi '207) in view of Raddi '246.

In regard to claim 1, Yoshimi '207 discloses a contact member (Fig. 1A – 4 steering wheel), a biological information detecting member (Fig. 1A – 1 & 2 electrodes), and an amplifier (Fig. 2A – 31 Amplifier Circuit), but does not disclose the sum of the impedance between the person and biological information detecting member and resistance between the biological information detecting member and amplifier as being less than 1/100 of the input impedance of the amplifier. However, Raddi '246 discloses a sum of a resistance between the biological information detecting member and the amplifier (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.), and an impedance between the subject in contact with the contact member and the biological information detecting member (Col. 2 – Ln. 65-67, skin to electrode impedance = 1,000 ohms), is not more than fraction (1/100) of an input impedance in the amplifier (Col. 3 – Ln. 1, amplifier input impedance = 1 megohm). It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the resistance and impedance characteristics disclosed in Raddi '246 for the circuit disclosed in Yasushi '246, since impedance between the skin and detecting member must be low to minimize error caused by the high input impedance of the

amplifier (Raddi '246, Col. 3 – Ln. 30-40) and the resistance between the detecting member and amplifier must be large compared to impedance between the right and left arm of the patient (Raddi '246, Col. 6 – Ln. 1-14) in order to make accurate measurements.

Claim 11. The apparatus for detecting biological information according to claim 1, wherein the contact member comprises a controller used for at least one of an automobile (Fig. 1A – 4 steering wheel), a ship, and an airplane.

Claim 12. The apparatus for detecting biological information according to claim 1, wherein the contact member comprises a controller, used for controlling at least one of an automobile, a ship, and an airplane, and an auxiliary contact piece (Yoshimi '207, Fig. 4 – 10 Shift Lever), constituted to assist a subject controlling at least one of the automobile, the ship, and the airplane using the controller when the subject comes into contact with the auxiliary contact piece.

Claim 13, the apparatus for detecting biological information according to claim 12, wherein in the case in which said apparatus for detecting biological information is provided in the automobile, the auxiliary contact piece is at least one of a side brake piece, an armrest piece, and a shift lever piece (Yoshimi '207, Fig. 3 – 10 Shift Lever).

Claim 14, the apparatus for detecting biological information according to claim 12, wherein one of the biological information detecting members provided in the controller, and one of the biological information detecting members provided in the auxiliary contact piece, are connected (Yoshimi '207, Fig. 3 – an electrical connection between the shift lever 10 and steering wheel 4 is depicted).

Claim 15, the apparatus for detecting biological information according to claim 12, wherein the amplifier amplifies the biological signal detected by one of the biological information detecting member provided in the controller, and the biological information detecting members provided in the auxiliary contact piece, with which the subject is in contact (Yoshimi '207, Col. 2 – Ln. 10-20).

Claim 16, the apparatus for detecting biological information according to claim 12, wherein in the case in which the amplifier amplifies the biological signals from the biological information detecting member of two lines, the amplifier amplifies the biological signal, which is detected when the subject comes into contact with the biological information detecting member provided in the controller of one of two lines, and the biological signal, which is detected by one of the biological information detecting member provided in the controller of another one line of two lines and the biological information detecting member provided in the auxiliary contact piece of said another one of two lines, with which the subject is in contact (Yoshimi '207, Col. 4 – Ln. 17-23).

In regard to claim 18, Yoshimi '207 discloses a contact member (Fig. 1A – 4 steering wheel), a biological information detecting member (Fig. 1A – 1 & 2 electrodes), an amplifier (Fig. 2A – 31 Amplifier Circuit), and an auxiliary contact piece (Fig. 4 – 10 Shift Lever), but does not disclose the sum of the impedance between the person and biological information detecting member and resistance between the biological information detecting member and amplifier as being less than 1/100 of the input impedance of the amplifier, wherein the resistance of the detecting member is not more than 5 kΩ. However, Raddi '246 discloses a sum of a resistance between the biological

information detecting member and the amplifier (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.), and an impedance between the subject in contact with the contact member and the biological information detecting member (Col. 2 – Ln. 65-67, skin to electrode impedance = 1,000 ohms), is not more than fraction (1/100) of an input impedance in the amplifier (Col. 3 – Ln. 1, amplifier input impedance = 1 megohm), wherein a resistance of the biological information detecting member is not more than 5 kΩ (Col. 6 – Ln. 9-13, R1 plus R2 should be in the range from about 1,000 ohms to about 20,000 ohms.). It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the resistance and impedance characteristics disclosed in Raddi '246 for the circuit disclosed in Yoshimi '207, since impedance between the skin and detecting member must be low to minimize error caused by the high input impedance of the amplifier (Raddi '246, Col. 3 – Ln. 30-40) and the resistance between the detecting member and amplifier must be large compared to impedance between the right and left arm of the patient (Raddi '246, Col. 6 – Ln. 1-14) in order to make accurate measurements.

Claim 23. The contact member according to claim 18, wherein the contact member comprises a controller used for at least one of an automobile (Yoshimi '207, Fig. 1A – 4 steering wheel), a ship, and an airplane.

Claim 24, The contact member according to claim 18, wherein the contact member comprises a controller, which is used for controlling at least one of an automobile (Yoshimi '207, Fig. 1A – 4 steering wheel), a ship, and an airplane, and an

auxiliary contact piece, which is constituted to assist a subject controlling at least one of the automobile, the ship, and the airplane using the controller when the subject comes into contact with the auxiliary contact piece (Yoshimi '207, Fig. 4 – 10 Shift Lever).

Claim 25, The contact member according to claim 24, wherein in the case in which the contact member is provided in the automobile, the auxiliary contact piece is at least one of a side brake piece, an armrest piece, and a shift lever piece (Yoshimi '207, Fig. 4 – 10 Shift Lever).

Claim 26, The contact member according to claim 24, wherein the biological information detecting member provided in the controller and the biological information detecting member provided in the auxiliary contact piece are connected (Yoshimi '207, Fig. 3 – an electrical connection between the shift lever 10 and steering wheel 4 is depicted).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip A. Kowalewski whose telephone number is 571-272-5668. The examiner can normally be reached on Monday - Friday: 8am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FAK
June 5, 2006

Michael Astorino